

IN THE CLAIMS

Please amend the claims as follows:

Claim 1-17 (Canceled).

Claim 18 (New): A voltage level shifter comprising:

a level changer including

a current block circuit having a first transistor provided with a gate electrode and first and second electrodes, the first electrode thereof configured to be supplied with a reference potential, the gate electrode of the first transistor configured to be supplied with a first potential of a low voltage power supply, and

a second transistor provided with a gate electrode and first and second electrodes, the gate electrode thereof configured to be supplied with an input signal having amplitude between the reference potential and the first potential which is higher than the reference potential, the second electrode of the second transistor configured to be provided with a second potential of a high voltage power supply which is higher than the first potential, the first electrode of the second transistor connected to the second electrode of the first transistor so that the level changer outputs the second potential or the reference potential in response to the input signal; and

an output circuit for supplying an output signal having amplitude between the reference potential and the second potential in response to an output signal from the level changer.

Claim 19 (New): A voltage level shifter comprising

a level changer including

a first input circuit operating in response to an input signal having amplitude between a reference potential and a first potential of a low voltage power supply which is higher than the reference potential,

a second input circuit operating in response to an output of the first input circuit,

a first MOSFET of a first conductive type provided with a gate electrode and first and second electrodes, the gate electrode thereof connected to the output of the first input circuit,

a second MOSFET of a first conductive type provided with a gate electrode and first and second electrodes, the gate electrode thereof connected to an output of the second input circuit,

a third MOSFET of a second conductive type provided with a gate electrode and first and second electrodes, the first electrode thereof connected to the high voltage power supply having a second potential which is higher than the first potential, the second electrode of the third MOSFET connected to the second electrode of the first MOSFET, the gate electrode of the third MOSFET connected to the second electrode of the second MOSFET,

a fourth MOSFET of a second conductive type provided with a gate electrode and first and second electrodes, the first electrode thereof connected to the high voltage power supply, the second electrode of the fourth MOSFET connected to the second electrode of the second MOSFET, the gate electrode of the fourth MOSFET connected to the second electrode of the first MOSFET, and

a current block circuit having

a fifth MOSFET of a first conductive type provided with a gate electrode and first and second electrodes, the first electrode thereof connected to the reference potential, the second electrode of the fifth MOSFET connected to the first electrode of the first MOSFET, the gate electrode of the fifth MOSFET connected to the low voltage power supply, and

a sixth MOSFET of a first conductive type provided with a gate electrode and first and second electrodes, the first electrode thereof connected to the reference potential, a second electrode of the sixth MOSFET connected to a first electrode of the second MOSFET, the gate electrode of the sixth MOSFET connected to the low voltage power supply; and

an output circuit for providing an output signal having amplitude between the reference potential and the second potential in response to an output signal from the second electrode of the fourth MOSFET.

Claim 20 (New): The voltage level shifter comprising according to claim 18, further comprising a retaining circuit for retaining the output of the level changer at the second potential or the reference potential.

Claim 21 (New): The voltage level shifter according to claim 20, wherein the retaining circuit is connected between the output circuit and the level changer and feeds back the output of the output circuit to the level changer.

Claim 22 (New): The voltage level shifter according to claim 20, wherein the output circuit and/or the retaining circuit includes a CMOS inverter.

Claim 23 (New): The voltage level shifter according to claim 20, wherein time required for feeding back the output of the output circuit to the level changer is shorter than time required for output transition of the level changer.

Claim 24 (New): A system comprising:

a voltage level shifter comprising a level changer and an output circuit;

a peripheral circuit connected to the voltage level shifter; and

an internal circuit connected to the level shifter,

wherein the level changer includes a current block comprising

a first transistor provided with a gate electrode and first and second electrodes, the first electrode thereof configured to be supplied with a reference potential, the gate electrode of the first transistor configured to be supplied with a first potential of a low voltage power supply, and

a second transistor provided with a gate electrode and first and second electrodes, the gate electrode thereof configured to be supplied with an input signal having amplitude between the reference potential and the first potential which is higher than the reference potential, the second electrode of the second transistor configured to be supplied with a second potential of a high voltage power supply which is higher than the first potential, the first electrode of the second transistor connected to the second electrode of the first transistor so that the level changer outputs the second potential or the reference potential in response to the input signal, and

the output circuit outputs an output signal having amplitude between the reference potential and the second potential in response to an output signal from the level changer.

Claim 25 (New): The system according to claim 24, wherein the internal circuit is supplied with the second potential and the peripheral circuit is supplied with the first potential.

Claim 26 (New): The system according to claim 25, wherein the peripheral circuit has a system operation period and a standby period, a potential of the low voltage power supply to the peripheral circuit and the voltage level shifter is switched to the reference potential during the standby period.

Claim 27 (New): A system comprising:

a voltage level shifter including a level changer and an output circuit;

a peripheral circuit connected to the voltage level shifter; and

an internal circuit connected to the level shifter,

wherein the level changer comprises

a first input circuit operating in response to an input signal having amplitude between a reference potential and a first potential of a low voltage power supply which is higher than the reference potential,

a second input circuit operating in response to an output of the first input circuit,

a first MOSFET of a first conductive type provided with a gate electrode and first and second electrodes, the gate electrode thereof connected to the output of the first input circuit,

a second MOSFET of a first conductive type provided with a gate electrode and first and second electrodes, the gate electrode thereof connected to an output of the second input circuit,

a third MOSFET of a second conductive type provided with a gate electrode and first and second electrodes, the first electrode thereof connected to the high voltage power supply having a second potential which is higher than the first potential, the second electrode of the third MOSFET connected to the second electrode of the first MOSFET, the gate electrode of the third MOSFET connected to the second electrode of the second MOSFET,

a fourth MOSFET of a second conductivity type provided with a gate electrode and first and second electrodes, the first electrode thereof connected to the high voltage power supply, the second electrode of the fourth MOSFET connected to the second electrode of the second MOSFET, the gate electrode of the fourth MOSFET connected to the second electrode of the first MOSFET, and

a current block circuit having

a fifth MOSFET of a first conductivity type provided with a gate electrode and first and second electrodes, the first electrode thereof connected to the reference potential, the second electrode of the fifth MOSFET connected to the first electrode of the first MOSFET, the gate electrode of the fifth MOSFET connected to the low voltage power supply, and

a sixth MOSFET of a first conductivity type provided with a gate electrode and first and second electrodes, the first electrode thereof connected to the reference potential, a second electrode of the sixth MOSFET connected to the first electrode of the second MOSFET, the gate electrode of the sixth MOSFET connected to the low voltage power supply, and

the output circuit provides an output signal having amplitude between the reference potential and the second potential in response to an output signal from the second electrode of the fourth MOSFET.

Claim 28 (New): The system according to claim 24, wherein the level shifter further comprises a retaining circuit for retaining the output of the level changer at the second potential or the reference potential.

Claim 29 (New): The system according to claim 28, wherein the retaining circuit is connected between the output circuit and the level changer and feeds back the output of the output circuit to the level changer.

Claim 30 (New): The system according to claim 28, wherein the output circuit and/or the retaining circuit includes a CMOS inverter.

Claim 31 (New): The system according to claim 28, wherein time required for feeding back the output of the output circuit to the level changer is shorter than time required for output transition of the level changer.

Claim 32 (New): The system according to claim 24, wherein the voltage level shifter and the internal circuit are configured in a microcomputer.

Claim 33 (New): The voltage level shifter according to claim 19, wherein the first conductive type is an N type and the second conductive type is a P type.

Claim 34 (New): The system according to claim 27, wherein the first conductive type is an N type and the second conductive type is a P type.

Claim 35 (New): The voltage level shifter according to claim 19 further comprising:

a seventh MOSFET of a second conductive type provided with a gate electrode and first and second electrodes, the gate electrode thereof connected to the reference potential, the first electrode of the seventh MOSFET connected to the second electrode of the third MOSFET, the second electrode of the seventh MOSFET connected to the high voltage power supply; and

a eighth MOSFET of a second conductive type provided with a gate electrode and first and second electrodes, the gate electrode thereof being connected to the reference potential, the first electrode of the eighth MOSFET connected to the second electrode of the fourth MOSFET, the second electrode of the eighth MOSFET connected to the high voltage power supply.

Claim 36 (New): The system according to claim 27 further comprising:

a seventh MOSFET of a second conductive type provided with a gate electrode and first and second electrodes, the gate electrode thereof connected to the reference potential, the first electrode of the seventh MOSFET connected to the second electrode of the third MOSFET, the second electrode of the seventh MOSFET connected to the high voltage power supply; and

a eighth MOSFET of a second conductive type provided with a gate electrode and first and second electrodes, the gate electrode thereof being connected to the reference potential, the first electrode of the eighth MOSFET connected to the second electrode of the fourth MOSFET, the second electrode of the eighth MOSFET connected to the high voltage power supply.



Claim 37 (New): The voltage level shifter according to claim 35, wherein the seventh MOSFET and the eighth MOSFET are P-channel MOSFETs.

Claim 38 (New): The system according to claim 36, wherein the seventh MOSFET and the eighth MOSFET are P-channel MOSFETs.

Claim 39 (New): The voltage level shifter according to claim 19, further comprising a retaining circuit for retaining the output of the level changer at the second potential or the reference potential.

Claim 40 (New): The voltage level shifter according to claim 39, wherein the retaining circuit is connected between the output circuit and the level changer and feeds back the output of the output circuit to the level changer.

Claim 41 (New): The voltage level shifter according to claim 39, wherein the output circuit and/or the retaining circuit includes a CMOS inverter.

Claim 42 (New): The voltage level shifter according to claim 39, wherein time required for feeding back the output of the output circuit to the level changer is shorter than time required for output transition of the level changer.

Claim 43 (New): The system according to claim 27, wherein the level shifter further comprises a retaining circuit for retaining the output of the level changer at the second potential or the reference potential.

Claim 44 (New): The system according to claim 43, wherein the retaining circuit is connected between the output circuit and the level changer and feeds back the output of the output circuit to the level changer.

Claim 45 (New): The system according to claim 43, wherein the output circuit and/or the retaining circuit includes a CMOS inverter.

Claim 46 (New): The system according to claim 43, wherein time required for feeding back the output of the output circuit to the level changer is shorter than time required for output transition of the level changer.